## REMARKS

Claims 1-21 are pending in the present application. Claims 19, 20 and 21 are cancelled above. Claims 1 and 6 are amended above. No new matter is added by the claim amendments. Entry is respectfully requested.

Claims 1-21 are objected to for informalities. The claims are amended above such that it is believed that the objections are overcome. Reconsideration of the objections is requested.

Claims 1-8, 11-13 and 15-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin (U.S. Patent 5,989,997) in view of Lui et al. (U.S. Patent 6,391,761). Claims 9, 10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Lui and further in view of Nashner et al. (U.S. Patent 6,465,358). In view of the amendments to the claims and the following remarks reconsideration of the rejections is respectfully requested.

The applicants' invention is directed to a dual damascene process used in forming an interconnection line in a semiconductor device. A first etch stopper is formed on a lower conductive layer that is formed on a semiconductor substrate. A first interlayer insulating layer is formed on the first etching stopper, and a second etching stopper is formed on the first interlayer insulating layer. A second interlayer insulating layer is formed on the second etching stopper. The second interlayer insulating layer, the second etching stopper and the first interlayer insulating layer are etched to form a via hole aligned with the lower conductive layer. During this etching, the first etching stopper is used as an etching stopping point. After the via is formed, a protective layer is formed in the via to protect a portion of the first etching stopper exposed at the bottom of the via hole, the protective layer filling the via hole and extending across the via hole. The protective layer is then etched such that the protective layer remains only in the bottom of the via hole. An etching mask is then formed on the second interlayer insulating layer. A portion of the second interlayer insulating layer adjacent to the via hole is then etched using the second etching stopping layer as an etching stopping point and using the etching mask on the second interlayer insulation layer such that a trench is formed connected to the via hole. The protective layer is then removed, and the portion of the first etching stopper at the bottom of the via hole is removed. An upper conductive layer filling the via hole and trench is then formed.

In accordance with the invention, the protective layer is formed filling the via hole and extending across the via hole. The protective layer is then etched such that the protective layer remains only in the bottom of the via hole. The claims have been amended to specifically recite features of the invention. That is, the claims are amended to clarify that after the etching of the protective layer, the protective layer remains only in the via hole. The claims are also amended to specify that an etching mask, different from the protective layer, is used in forming the trench connected to the via hole. It is believed that these clarifying claim amendments serve to distinguish the cited prior art.

In Lin, the photoresist layer 138 is formed filling the via hole and extending across the via hole. The photoresist layer 138 is etched, such that the photoresist layer 138a remains on the dielectric layer 134 and the photoresist layer 138b remains in the bottom of the via. This is in contrast to the applicants' device set forth in the amended claims in which the protective layer is etched such that the protective layer remains only in the bottom of the via hole. Lin also fails to teach or suggest a separate etching mask, different from the photoresist layer, used in etching the trench. That is, in Lin, the single photoresist layer 138 is used both to protect the bottom of the via hole and to define the extent of the trench during etching. Accordingly, Lin fails to teach or suggest the invention set forth in the amended claims.

In Lui, the liner layer is formed in the via hole. The liner layer is etched in the process of forming metal interconnect trenches. In this etching process, the liner layer remains on the interconnect dielectric layer and in the bottom of the via. Lui fails to show the protective layer filing the via hole and extending across the via hole, the etching of the protective layer before the etching of the trench, and etching of the protective layer such that the protective layer remains only in the bottom of the via. Lui also fails to teach or suggest the separate etching mask and protective layer in the bottom of via hole used during etching of the trench to both protect the bottom of the via hole and define the trench. Accordingly, Lui fails to teach or suggest the invention set forth in the amended claims.

Since neither Lin nor Lui teach or suggest the invention set forth in the amended claims, there is no combination of the references that would provide such teaching or suggestion. Since the references, taken alone or in combination, fail to teach or suggest the invention set forth in the

amended claims, it is believed that the claims are allowable over the references, and reconsideration of the rejections of claims 1-8, 11-13, and 15-21 under 35 U.S.C. §103(a) based on Lin and Lui is respectfully requested.

Nashner is cited as teaching a spin-on type dielectric protective layer and removal of the protective layer using a wet-etching technique with HF solution diluted with water. However, Nashner fails to teach or suggest the features of the amended claims absent from the Lin and Lui references discussed above. Nashner fails to teach or suggest the invention set forth in the amended claims.

Since none of Lin, Lui and Nashner teaches or suggests the features of the invention set forth in the amended claims, combining the references fails to provide such teaching or suggestion. Therefore, Lin, Lui and Nashner, taken alone or in combination, fail to teach or suggest the invention set forth in the amended claims. Accordingly, it is believed that the claims are allowable over the references, and reconsideration of the rejections of claims 9, 10 and 14 under 35 U.S.C. §103(a) based on Lin, Lui and Nashner is respectfully requested.

In view of the foregoing remarks, it is believed that all claims pending in the application are in condition for allowance, and such allowance is respectfully solicited. If a telephone conference will expedite prosecution of the application, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

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